US Rates

JOHN D. HERRMANN
Director

Interest Rates Sales & Trading

T: +1-212-405-7447
E: John.Herrmann@mufgsecurities.com

MUFG Securities
A member of MUFG, a global financial group

Year 2020 Strategy Update – Our models calculus maintains its core baseline forecast - the Decade of the 2020s likely may start WEAKLY for its first four consecutive years, from 2020 through 2023 … Growth is not forecast to be impressive over the remaining six years of the decade, either … We continue to run "recession scenarios" through our models, but the conclusion is little changed. The U.S. economy likely may shed closer to now 2.883 million private sector jobs over March-June 2020 time period – the fastest pace of job cuts at the start of any recession since 1946.

26 March 2020

OVERVIEW

Our models continue to highlight risk of a U-shaped pattern to recovery in the U.S. economy after what may be a sharp recession over the months of March through September 2020- see Table 3 (for quarter-by-quarter forecasts).

Equally troubling (and disconcerting) is our models long-held forecast for a modest economic growth performance over the years 2021 through 2023 – as the baby boomer retirement wave enters an inflection point – Chart 4.

Our intermediate-term growth forecasts challenges the "escape velocity" viewpoint of the more optimistic private and official forecasts – and of the implicit outlook of many of the most optimistic members of the investment community.

Again, we recommend to clients to NOT be "complacent" with the risk to a deep and long down-turn, more "U-shaped" recovery, with the ZIRP maintained for ALL of Years 2020, 2021, 2022 !

***** For us, such an intermediate-term pattern to economic growth spells risk that the 2-year Treasury Note's yield may grinds toward 8.0 bps (as in 0.08%) in the months ahead.***

Good Luck to All ! .

THE GO-STOP-GO ECONOMY ?

In general, looking at a host of indicators, it appears that the economy was slowing toward recession over the final two-to-three Quarters of 2019.

The boost to economic activity over the First Quarter of 2020 appeared quite transitory – as much of it appeared driven by warm and dry weather patterns that pulled forward into January-February months activity that “normally” took place over late-March through early-May, that is:

(1) VERY benign weather patterns in January-February that temporarily boosted some economic indicators, (2) the Government (at all three levels stepped up spending in January-February, of which a substantial part was in construction outlays - again, a temporary weather-related boost), and (3) our models suggest, a very sharp narrowing of the net foreign trade gap's deficit in the 1st Quarter that supported real GDP growth.

Still, there was an eerie tone to the mix of economic data over the first three months of 2020, many of which are recession signals: (1) an extremely strong narrowing of the trade gap, (2) a plunge in business inventories, (3) a bottoming pattern in weekly initial jobless claims (that unfolded over the prior 11-months), (4) weak business spending on fixed capital equipment and structures over the last fifteen-months, and (5) a slowing in household spending upon durable consumption goods ....

To those broad patterns, the pernicious COVID-19 virus was injected into the U.S. and world’s economies from December 2019 to the present.

Last week’s unprecedented surge in new filings (which occurred AFTER the March monthly reference week for nonfarm payrolls) captured businesses, governments and school districts attempt to thwart the community spread of the virus.

A “real-time” interpretation of the timing of those job cuts suggests that a goodly portion of the job loss likely may be centered in the April nonfarm payroll report.

However, our experience with the data for some twenty-five years now suggest risk that the March nonfarm payroll figure may be weak, as well.

Also, importantly, the household survey of unemployment likely may be extremely weak over the coming four monthly reports – which may push the U3 unemployment rate up by some 150 bps (towards 5.00%, or higher) from the last reading of 3.50%.

For us, our models continue to highlight risk of a more "U-Shaped" recovery over the 2nd Half of 2020 and much of the year 2021, which would spell risk that the monthly unemployment rate "climbs" from the rate level set over the Second Quarter.

We also worry that, over the coming two-to-three-years, should the recovery be as dismal as our models forecast, that the labor force participation rate likely may resume its downward path – as worker discouragement intensifies in a lack-luster economy – see Table 3.

Again, we recommend to clients to NOT be "complacent" with the risk to a longer down-turn, more "U-shaped" recovery, with the ZIRP maintained for ALL of 2020, 2021, 2022 !

NEW YORK – THE EPICENTER OF COVID-19 CASES IN AMERICA

As we argued weeks ago, **New York likely may emerge as the epicenter of COVID-19 cases in America**.

This unfortunate distinction owes to many features of the landscape, including, but not limited to:

- City and State officials lethargy in their initial response to COVID risks,
- International travelers from affected regions (of China, Europe and beyond),
- A youthful city that, unfortunately, believed in their youthful invulnerabilities,
- A transit system that places individuals face-to-face (without masks or gloves),
- An extremely lethargic response by the CDC and healthcare practitioners to the virus and community spread risks,
- An extremely lethargic response by the political officials at the Federal level to the virus and community spread risks,
- A slow response by business leaders to risk of community spread,
- A healthcare system unprepared to meet the challenge of community spread of the virus,
- Etc. etc.

*** Nonetheless, even our initial pass estimate would suggest that ***the current year's economic recession likely has commenced at the steepest pace (of private-sector job loss) of any economic recession dating back to the year 1945***.

The magnitude of such an "initial jolt" to the economy might linger over the summer months – even should fiscal and monetary stimuli promote a more optimistic sentiment for some risk-takers.

A troubling concern our models continue to highlight is the risk that, by mid-May, metro-New York City may have near four-times the stated number of COVID-19 cases for the city of Wuhan (while exceeding Wuhan's death tally) – a shock to consumers' and businesses' confidence (and a negative feedback loop into employment growth over the 2nd Half of 2020).

Such a risk likely has not been captured in the Year 2020 economic estimates (currently) formulated by most official and private economists.

****** The current estimates – Table 3 - remain quite "preliminary" and are not even "complete"- by our standards of forecasting***!

Bottom Line: Again, we caution our clients over risk of complacency in the near-term. The seduction of the promises of monetary and fiscal stimulus, alongside the improving spring and summer season weather patterns - and American's natural youthful tendencies to move forward (and to not look back) and to trust in technology's ability to cure all ills – is a heady elixir to jump optimistically forward (into risk or otherwise).

We simply note three risks of caution over the near-term and we mention (once again) our intermediate-term recession risk scenario:

(a) the initial jolt to the U.S. recession likely is quite sizeable,

(b) COVID-19's impact on metro-NYC, and the nation, might exceed (and linger longer) the expectations of most market participants,

(c) there may be a substantial negative feedback loop from the world's economy to the United States economy over the 2nd Half of 2020, and

(d) a structural inflection point in baby boomer retirement demographics beginning in late-2021 and running (forcefully) strong in each and every year of the following nine-consecutive years – Year 2022 through Year 2030.

WILL 'STIMULUS' DELIVER "ESCAPE VELOCITY" FOR THE U.S. ECONOMY ?

While we appreciate the "swift" response of fiscal and monetary policymakers to the COVID-19 risk, we are not so convinced that the current size of the stimulus will be strong enough to pull the U.S. economy free and clear and back to a path of sustainable trend – or, what investors call "escape velocity."

Should our forecasts prove accurate, they imply risk that:

- the FOMC has to enhance and enlarge its current Q.E. program over this year and the next year and the next year.
- the Federal Government's fiscal stimulus package likely may need additional enhancements, too.

The timing of the COVID-19 shock, so close to the baby boomer retirement shock/inflection point (for each and every year from 2022 through year 2030) is a dark risk to our intermediate-term forecast – see Table 3.

The U.S. economy is NOT the only economy to labor under a severe aging demographic adjustment over the coming ten-years – as many overseas economies likely will suffer under an aging demographic, as well (such as, all of Europe, several parts of Asia, our neighbors to the north - Canada, and elsewhere.

*** *Indeed, our models continue to highlight "Double Dip" recession risk for the time period of 2H-2022 through Year 2023* …

Such a "double-dip" recession risk would place the entire decade of the 2020s on a low trajectory in the USA and abroad.

In such a decade, disinflation risks may prove to be the norm, not the exception.

[Nonetheless, the current pick-up in investment spending upon hospitals, healthcare equipment, etc. to fight the community spread of COVID-19 - ahead of further aging of baby boomers – likely may prove to be a "good investment" for the economy (as it is a good investment to get those facilities in place ahead of the inflection point in baby boomer retirements in 2022 and thereafter).]

BASE CASE EXPECTATIONS

- **Next Fed move**: FOMC restored ZIRP (as we predicted), of a policy rate of 0.00% to 0.25% for the balance of the year 2020 – with the effective federal funds target rate trading near nine or ten basis points.

  ***** Our models highlight risk that the policy interest rate remains at ZIRP over all of the years 2020 and 2021 – and likely even longer.**

  Our economic models highlight "recession risk" for America over the year 2020 and of a weakened growth rate for America over the years 2021-2022-2023.

  Importantly, our models highlight risk of a "Double-Dip" economic recession beginning in the year 2022 (following Year 2020's recession).

  Our models highlight risk of significantly weaker economic growth in overseas economies (especially Europe) over the entirety of the years 2020 and 2021 (and into the years 2022 and 2023).

As we had been expecting for Chair Powell in the year 2020, the Committee likely may ultimately deliver upon an easing cycle of risk-management emergency/insurance policy interest rate cuts – to support financial conditions, confidence and economic activity (*as health officials wrestle with community spread of COVID-19*) – see Tables 1 and 2.

- **Terminal rate view:** For a decade now, our models have forecast a relatively "low" neutral-terminal federal funds target rate of near 1.50%. Such a forecast of the "terminal rate" remains significantly lower than the FOMC's baseline projection of near 2.50% to 3.00%.

  We note that, over the previous eight-years, the Committee steadily has marked lower their projection for the terminal rate from 4.25% towards 2.50%, but the Committee has not embraced our forecast for a neutral rate of just 1.50%.

  ***** We expect the FOMC to lower its SEP Projection for the terminal rate to just 2.00% over the course of the year 2020.**

  The basis for our models forecast of a "low" terminal interest rate includes many factors: our discoveries over deep structural challenges to U.S. labor markets (also, in numerous labor markets abroad) and of persistent uncertainty in the political landscape of America to address such challenges (uncertainty that typically dampens the pace of business investment, business formation and of labor productivity growth) and of quiescent inflation at home and disinflation-deflation risk abroad (where structural issues in the labor force prevail in most developed economies).

  <u>According to our models forecasts, the Committee over-shot the 'neutral policy rate' during its interest rate policy tightening cycle over the years 2017-2018. Due to such an "over-shoot" risk, we anticipated reductions in the policy interest rate over the year 2019 into the year 2020.</u>

  <u>COVID-19 community and global spread simply reinforced the trend to lower interest rates – as the spread pulled forward into the year 2020 the recession risk our models had spied for the years 2021 and 2022.</u>

- **Curve shape comment*:*** Our models continue to glean risk ***over the emergence of a "U-shaped" economic slowdown and recession in the USA*** over the years 2020-2021-2022-2023.

  Given our chief intermediate-term risk concern, our models continue to forecast a series of non-conventional measures by the FOMC over the near- and intermediate-term horizons – see our Tables 1 & 2 – alongside a stepwise series of substantial, stimulative fiscal policy responses – which may balloon the Federal Debt-to-GDP ratio towards 112% by 2024 (if not sooner). .

  Should our risk-based interest rate scenario prove accurate, then the 2s-10s and 2s-30s yield curve likely may steepen over the intermediate-term – see Forecast Table 2.

  <u>Please note</u>: Over all of-2019 into 2020, the FOMC's SEP "dots charts" predicted a further STRENGTHENING of the U.S. economy over the years 2021 and 2022 and of the possibility of another TWO-to-THREE twenty-five bps short-end interest rate HIKES over those years – **<u>potential outcomes that were/are the exact opposite of our models economic and interest rate forecasts</u>**.

  *<u>*** The FOMC needs to DRASTICALLY reconsider and revise its near- and intermediate-term SEP projections for the U.S. (and world) economy</u>*!

KEY RISK FACTORS TO OUR VIEW IN THE MONTHS AHEAD

- **A U-Shaped recession risk for America and the World's economy in the years 2020-2021**. Risk over the USA and worldwide "community spread" of COVID-19 over the spring-summer 2020. Risk of potentially deeper impediments to the world's economic supply chain**.**
- Risk of a re-emergence and deepening of "community spread" of COVID-19 (in the absence of the emergence of a vaccination for the COVID-19 virus) <u>over the (normal flu season's) time period from October 2020 through March 2021</u> – that may prompt the FOMC to maintain the range of the federal funds target rate near ZIRP, 0.00% to 0.25%, through most of the year 2021.
- Risk of weak economic growth over the years 2020-2021 (and of further disinflation pressures) in Europe and in Asia (e.g., China, Japan, South Korea, Singapore, Hong Kong, elsewhere) – that depletes growth more broadly through emerging economies.
- Risk of a deepening of strains in the markets for risky assets over 2020-2021 (on balance).
- Risk of a continuation of financial markets illiquidity – across a range of securities – as traders work from home and Dodd-Frank regulations limit financial intermediation.
- Risk of average monthly growth in total nonfarm payrolls of -66.2K per month in the year 2020 and of just +101.34K per month over the year 2021.
- <u>A "TARP-like" bailout program</u>: Adverse risk to commercial aircraft industry run-rates and deliveries over nearly all of the year 2020, into the First Half of 2021 alongside a dramatic pull-back in the run-rates of the airlines/transportation industries.
- Political risks abound over foreign trade negotiations, of Brexit (trade negotiations), of geopolitical matters, of the outcome(s) of America's November 2020 National Elections, of FAA rulings, etc.
- As we have argued upon numerous occasions, there remain strong global influences upon the U.S. Treasury (and swaps) yield curve! Global financial conditions and flows need to be monitored closely over the near- and intermediate-terms, including actions of foreign central bankers. The 'levels' of overseas interest rates need to be monitored closely, as well.

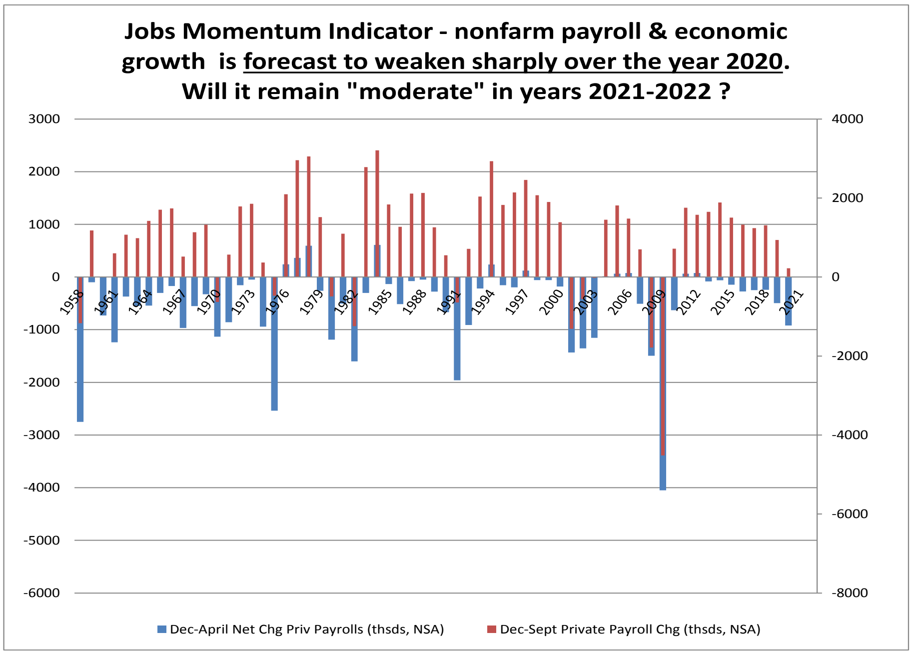
CONCLUSIONS

Our base case forecasts are preliminry, but there remain risks of:

- ***Continued deceleration in real GDP growth and employment growth over the year 2020, alongside continued uncertainty in employment prospects and in growth over the years 2021, 2022 and 2023;***
- ***Quiescent inflation over the next three-to-four years –*** Table 3;
- ***Risk of the persistence of ZIRP over the years 2020 and 2021 (and longer)*** – Table 2***.***

Good Luck to All in 2020 and beyond !

CHART 1: YEARS 2020-2021-2022-2023 ENTER A "DOUBLE-DIP" RECESSION?



Source: ISM Survey, Bloomberg LP, MUFG Securities

TABLE 1: OUR MODELS FORECASTS POINT TO THE CONTINUANCE OF ZIRP OVER 2020-2023

FOMC Meeting Date	*March 17, 2020* Our Models' Probability of a 25 bps Rate Change (to the target range)	*October 17, 2019* Forward Markets' Price of a 25 bps Rate Change (FFZ, approximate)
Mar. 17-18, 2020	-1.10%	-64.10%
Apr. 28-29, 2020	-4.10%	-72.20%
Jun. 09-10, 2020	-7.20%	-90.40%
Jul. 28-29, 2020	-11.80%	-98.20%
Sep. 15-16, 2020	-14.40%	-111.40%
Nov. 04-05, 2020	-16.50%	-122.30%
Dec. 15-16, 2020	-18.30%	-138.40%
Jan. 26-27, 2021*	-19.70%	-143.50%
Mar. 16-17, 2021*	-20.90%	
Apr. 27-28, 2021*	-17.60%	
June 15-16, 2021*	-10.10%	
July 27-28, 2021*	-3.40%	
Sep. 14-15, 2021*	0.80%	
Oct. 26-27, 2021*	2.50%	
Dec. 14-15, 2021*	5.30%	
Jan. 25-26, 2022*	1.60%	
Mar. 15-16, 2022*	-1.70%	
Apr. 26-27, 2022*	-3.40%	
Jun. 14-15, 2022*	-4.10%	
Jul. 26-27, 2022*	-4.20%	

*Sources: Federal Reserve, Bloomberg LP, MUFG Securities forecasts & calculations, 03/17/2020. * = Projected Dates*

*Source: Bloomberg LP, Federal Reserve, MUFG Securities (17 March 2020). * = Projected Dates*

TABLE 2: OUR INTERMEDIATE-TERM FORECAST HIGHLIGHTS RISK OF LOWER YIELDS & STEEPER YIELD CURVE

Quarter-End	USA Federal Funds Rate Target Range	USA 1-Year Treasury Yield	USA 2-Year Treasury Yield	USA 3-Year Treasury Yield	USA 5-Year Treasury Yield	USA 10-Year Treasury Yield	USA 30-Year Treasury Yield
Current	1.00% - 1.25%	0.17%	0.38%	0.41%	0.46%	0.51%	0.88%
1Q-2020	0.00% - 0.25%	0.13%	0.32%	0.35%	0.39%	0.45%	0.83%
2Q-2020	0.00% - 0.25%	0.10%	0.19%	0.22%	0.26%	0.36%	0.77%
3Q-2020	0.00% - 0.25%	0.11%	0.18%	0.21%	0.25%	0.43%	0.83%
4Q-2020	0.00% - 0.25%	0.12%	0.16%	0.20%	0.24%	0.51%	0.89%
1Q-2021	0.00% - 0.25%	0.13%	0.15%	0.19%	0.24%	0.48%	0.87%
2Q-2021	0.00% - 0.25%	0.13%	0.13%	0.18%	0.23%	0.46%	0.85%
3Q-2021	0.00% - 0.25%	0.13%	0.13%	0.19%	0.25%	0.44%	0.83%
4Q-2021	0.00% - 0.25%	0.14%	0.15%	0.22%	0.29%	0.45%	0.84%
1Q-2022	0.00% - 0.25%	0.14%	0.15%	0.24%	0.31%	0.51%	0.89%
2Q-2022	0.00% - 0.25%	0.13%	0.14%	0.25%	0.33%	0.58%	0.96%
3Q-2022	0.00% - 0.25%	0.12%	0.15%	0.27%	0.36%	0.66%	1.03%
4Q-2022	0.00% - 0.25%	0.13%	0.17%	0.31%	0.42%	0.76%	1.13%
1Q-2023	0.00% - 0.25%	0.18%	0.21%	0.37%	0.49%	0.87%	1.25%
2Q-2023	0.00% - 0.25%	0.25%	0.28%	0.43%	0.56%	0.98%	1.38%
3Q-2023	0.00% - 0.25%	0.32%	0.36%	0.52%	0.66%	1.11%	1.51%
4Q-2023	0.00% - 0.25%	0.41%	0.45%	0.62%	0.77%	1.24%	1.64%
1Q-2024	0.25% - 0.50%	0.47%	0.53%	0.71%	0.87%	1.36%	1.77%
2Q-2024	0.25% - 0.50%	0.54%	0.61%	0.81%	0.98%	1.41%	1.83%
3Q-2024	0.25% - 0.50%	0.63%	0.72%	0.92%	1.10%	1.44%	1.87%
4Q-2024	0.25% - 0.50%	0.72%	0.82%	1.01%	1.22%	1.49%	1.93%

*Bloomberg LP, Federal Reserve, *MUFG MUSA (John Herrmann) Forecast for quarter-end yields, 03/12/2020*

Source: Bloomberg LP, Federal Reserve, MUFG Securities (12 March 2020)

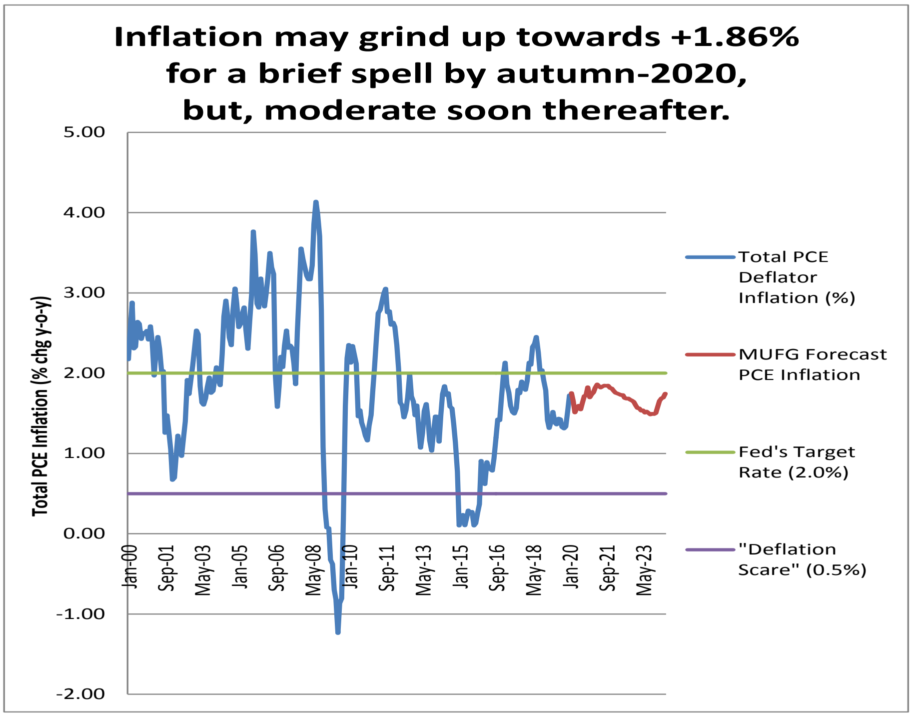
TABLE 3: **DECADE OF THE 2020S MAY START WEAKLY FOR FOUR CONSECUTIVE YEARS …**

Preliminary	2016	2017	2018	2019	2020	2021	2022	2023	2019				2020			
									1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
	(A)	(A)	(A)	(A)	(F)	(F)	(F)	(F)	(A)	(A)	(A)	(A)	(F)	(F)	(F)	(F)
Aggregate Output	Growth (% avg. ann.)								Growth (% q/q SAAR)				Growth (% q/q SAAR)			
Real GDP (%)	1.64	2.37	2.93	2.334	0.942	0.427	0.777	0.703	3.10	2.01	2.10	2.128	1.436	-1.273	0.114	0.460
Consumer Spending (%)	2.74	2.61	3.00	2.590	0.80	0.00	0.93	0.74	1.14	4.55	3.15	1.83	0.77	-2.510	0.76	-0.31
Business Fixed Investment (%)	0.71	4.36	6.36	2.07	-1.94	0.27	0.78	0.42	4.43	-1.02	-2.27	-2.46	-1.64	-3.51	-0.73	0.38
Residential Investment (%)	6.46	3.50	-1.47	-1.51	5.11	0.44	0.24	-0.18	-1.08	-2.94	4.64	6.49	13.54	1.02	-0.98	0.54
Government Spending - Clinton (%)	1.81	0.70	0.25	0.16	-0.11	0.28	0.27	0.03	-0.33	0.22	0.34	-0.14	-0.29	0.11	0.23	-0.21
Government Spending "Sunset" - Trump (%)	1.81	0.70	1.71	2.01	0.21	-0.56	-0.10	-0.26	2.90	4.81	1.33	1.34	0.87	1.02	0.81	0.71
Government Spending "Non-Sunset" - Trump (%)	1.81	0.70	1.71	2.33	1.90	0.81	0.54	0.66	2.90	4.81	1.69	2.53	1.74	1.53	1.22	0.98
Net Exports ($ blns, chained '09)	-783.7	-849.75	-920.03	-953.88	-828.13	-831.15	-839.65	-824.9	-944.00	-980.70	-990.10	-900.70	-847.30	-792.70	-827.20	-845.30
Inventory Change ($ blns, chained '09)	23.00	31.65	48.18	66.98	-23.10	25.15	20.80	10.28	116.00	69.40	69.40	13.10	-21.70	-44.00	-32.90	6.20
Real Final Sales to Priv Domestic Purchasers (%)	2.55	2.92	3.37	2.35	0.50	0.06	0.88	0.66	1.60	3.33	2.29	1.28	0.84	-2.52	0.46	-0.17
	Growth (% 4Q/4Q)								Growth (% year-over-year chg, SAAR)				Growth (% year-over-year chg, SAAR)			
MUFG Forecast GDP Growth (%)	2.03	2.800	2.516	2.335	0.180	0.671	0.873	0.522	2.65	2.28	2.07	2.334	1.92	1.09	0.59	0.180
Median FOMC SEP Projection GDP Growth (%)	2.40	2.10	2.50	2.20	2.00	1.80	1.90									
	Potential															
MUFG Forecast "Potential" GDP Growth (%)	1.65	1.65	1.65	1.55	1.55	1.50	1.50	1.50								
Median FOMC SEP Proj. "Potential" (%)	2.00	1.80	1.80	1.90	1.90	1.90	1.90									
Labor Market	Year-End (%)								2019 Quarter-End (%)				2020 Quarter-End (%)			
U3 Unemployment Rate (%)	4.70	4.0912	3.86	3.535	5.15	5.38	5.120	4.93	3.81	3.67	3.52	3.54	3.70	5.25	4.95	5.15
Labor Force Participation Rate (%)	62.7	62.7	63.1	63.2	63.1	62.8	62.5	62.2	63.0	62.9	63.2	63.2	63.3	63.2	63.2	63.0
Average Monthly Nonfarm Payroll (thsds)	195.47	175.77	192.8	174.69	-152	101.34	97.47	63.21	174.0	152.0	193.0	184.0	128.0	-795.0	-97.0	154.0
Average Hourly Earnings (%, yoy chg, All Employees)	2.652	2.74	3.341	3.02	2.68	2.51	2.37	2.22	3.24	3.18	3.00	3.02	3.08	2.98	2.89	2.91
Median FOMC SEP Projection of U3 Rate (%)	4.70	4.30	4.10	3.50	3.60	3.80	3.70									
														-152.5		
MUFG Forecast NAIRU of U3 Rate (%)	4.40	4.15	4.00	3.90	3.80	3.80	3.80	3.80								
Median FOMC SEP Proj. of NAIRU U3 Rate (%)	4.80	4.70	4.60	4.40	4.40	4.40										
Inflation (% chg)	Inflation (% avg. ann.)								2019 Inflation (% y-o-y)				2020 Inflation (% y-o-y)			
Total PCE Deflator	1.014	1.766	2.090	1.414	1.808	1.778	1.668	1.496								
Core PCE Deflator	1.591	1.626	1.950	1.612	1.686	1.656	1.523	1.517								
	Inflation (% yoy, year end)															
MUFG Forecast PCE Inflation (%)	1.691	1.854	1.784	1.613	1.828	1.722	1.594	1.479	1.403	1.360	1.326	1.613	1.819	1.758	1.877	1.843
Median FOMC SEP Projection PCE Inflation (%)	1.50	1.60	2.10	2.00	2.10	2.10	2.00									
MUFG Forecast Core PCE Inflation (%)	1.795	1.691	1.971	1.584	1.667	1.626	1.498	1.545	1.481	1.611	1.658	1.584	1.760	1.663	1.684	1.716
Median FOMC SEP Proj. Core PCE Inflation (%)	1.70	1.50	2.00	2.10	2.10	2.10										
	Year-End (%, effective fed funds target rate)															
MUFG Forecast Federal Funds Target Rate (%)	0.875	1.375	2.400	1.625	0.125	0.125	0.125	0.125								
Median FOMC SEP Proj. Fed. Funds Target (%)	1.375	1.375	2.125	2.875	1.625	1.875	2.125									
Median FOMC SEP Proj. Fed. Funds "Neutral" (%)	3.50	3.00	2.80	2.80	2.50	2.50	2.50									

(A) = Actual BEA, Census, Commerce, DoL, BLS, Federal Reserve; (F) = MUFG Securities; U3 = quarter-end or year-end. MUFG Securities Forecasts Mar. 26, 2020

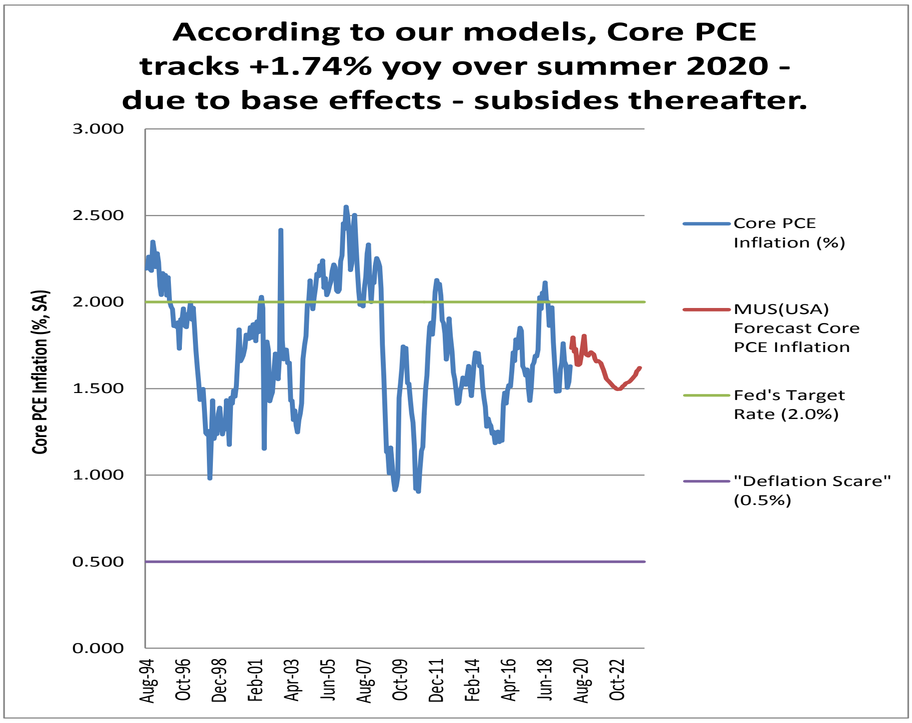
Source: BEA, Census, Commerce Dept., DoL, BLS, Federal Reserve, MUFG Securities Forecasts, Mar. 26, 2020

CHART 2: OUR FORECAST OF FOUR YEARS OF MODERATE INFLATION



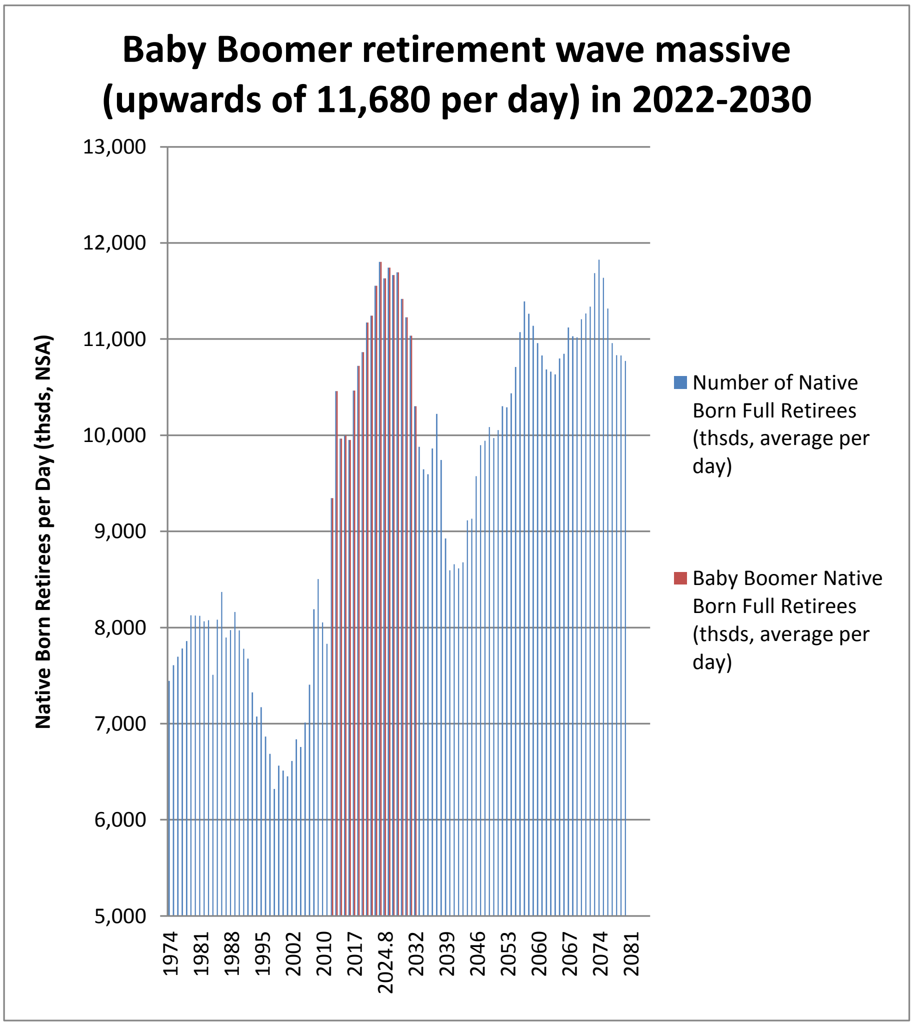
Source: BLS, BEA, Federal reserve, Bloomberg LP, MUFG Securities

CHART 3: OUR FORECAST FOR MODERATE CORE INFLATION, AS WELL



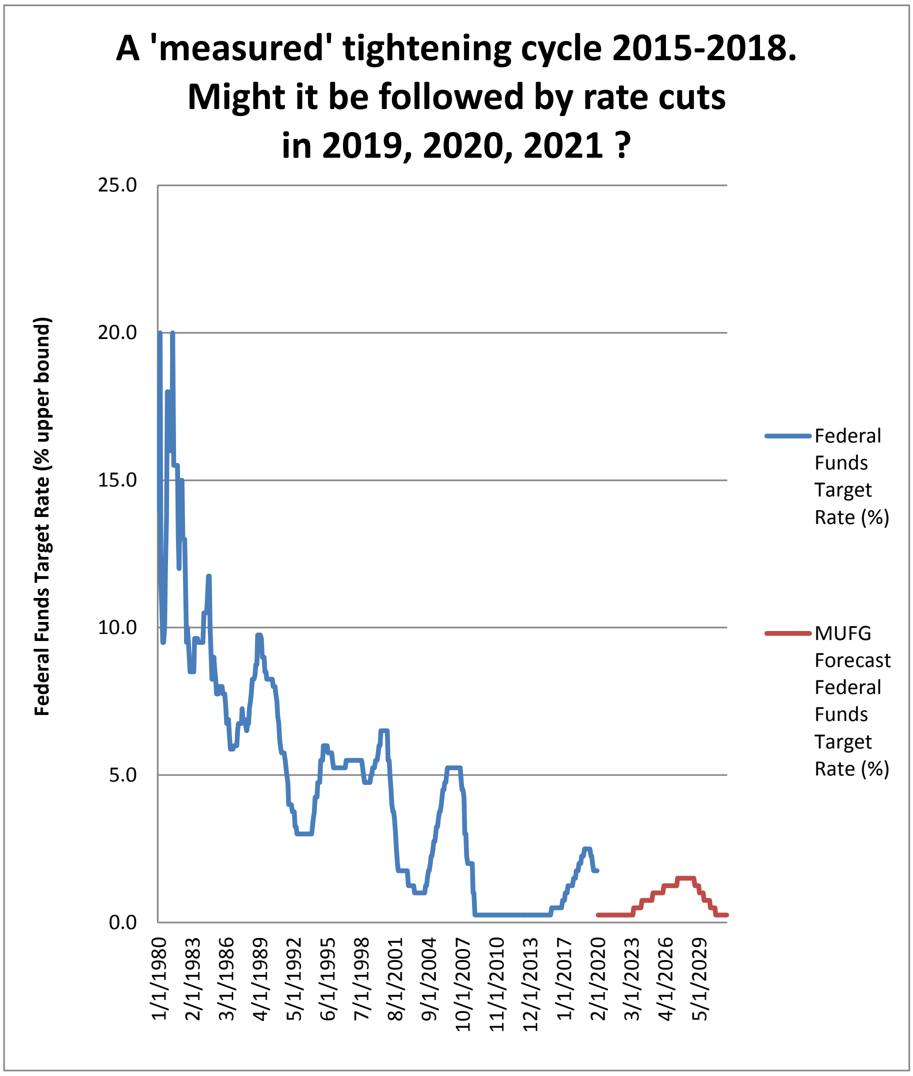
Source: BLS, BEA, Federal reserve, Bloomberg LP, MUFG Securities

CHART 4: MASSIVE AGING OF AMERICA OVER 2022 THROUGH 2030



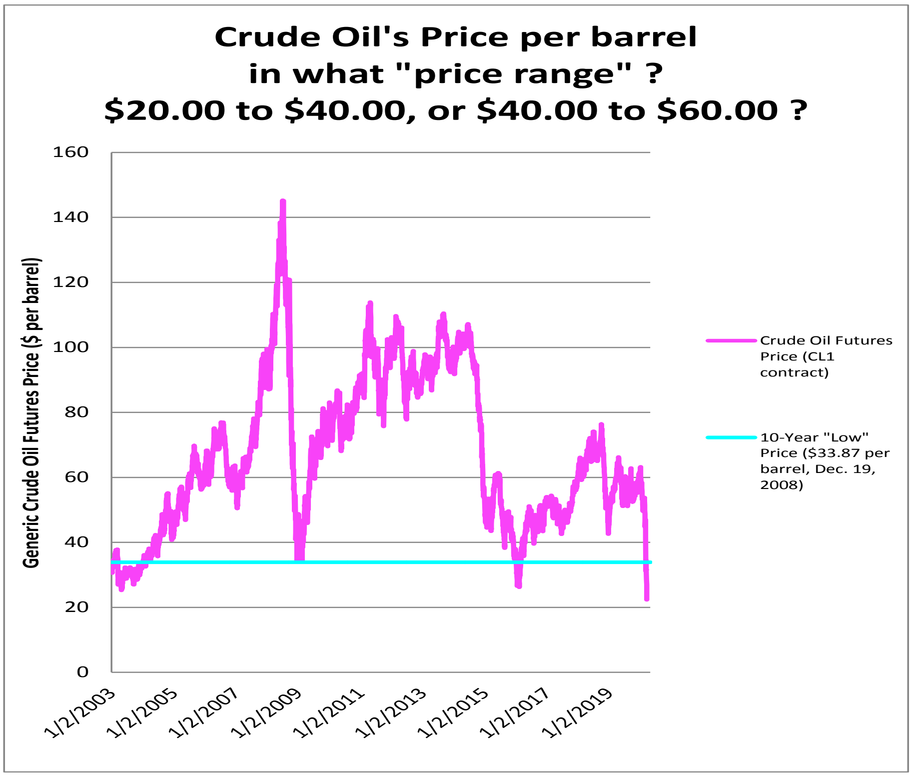
Source: CDC, Census, BLS, MUFG Securities

CHART 5: OUR MODELS FORECAST ZIRP FOR YEARS 2020, 2021 AND 2022



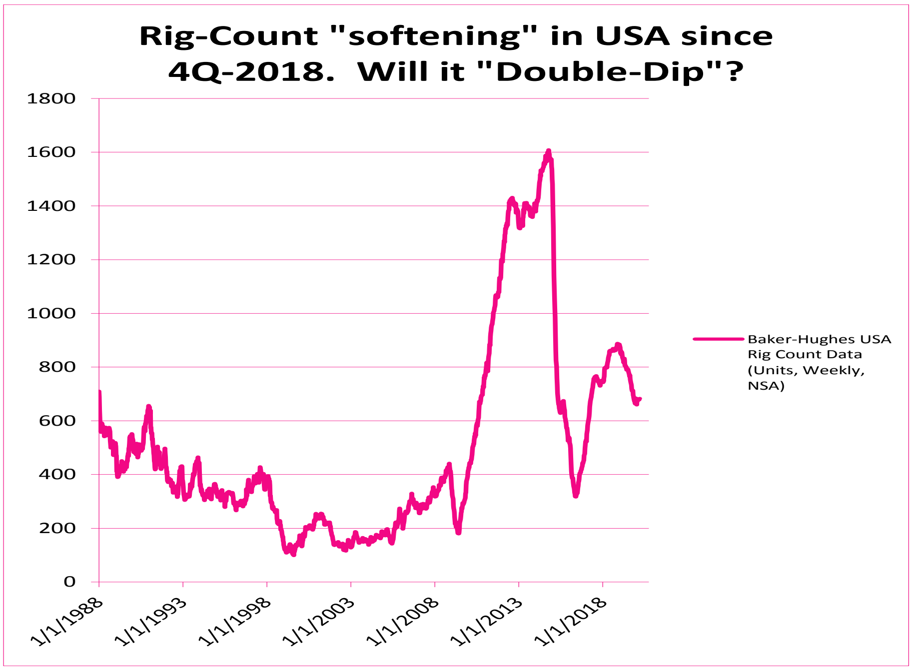
Source: Federal Reserve, Bloomberg LP, MUFG Securities

CHART 1: CRUDE OIL'S PRICE DECLINE MAY TRIGGER MINING JOB LOSS



Source: Bloomberg LP, MUFG Securities

CHART 2: WILL RIG COUNT PLUNGE, AGAIN ? ELIMINATING JOBS ?



Source: Baker Hughes, Bloomberg LP, MUFG Securities

US Rates

US Rates Strategy

JOHN D. HERRMANN
Director
T: +1 212 405 7447
E: John.Herrmann@mufgsecurities.com

Global Markets Research (FX)

European Head of GMR

DEREK HALPENNY
Managing Director
T: +44 (0)20 7577 1887
E: Derek.Halpenny@uk.mufg.jp

Asean Head of GMR

SOOK MEI LEONG
Director
T: +65 6918 5536
E: Leongsm@sg.mufg.jp

East Asian Head of GMR

CLIFF TAN
Director
T: +852 2862 7005
E: Cliff_Tan@hk.mufg.jp

Currency Analyst (Europe)

LEE HARDMAN
Vice President
T: +44 (0)20 7577 1965
E: Lee_Hardman@uk.mufg.jp

Tokyo Head of GMR

MINORI UCHIDA
Managing Director
T: +81 (0)3 6214 4148
E: Minori_Uchida@mufg.jp

Currency Analyst (Asean)

SOPHIA NG
Associate
T: +65 6918 5537
E: Sophia_ng@sg.mufg.jp

Head of Research & Strategist for MENA

EHSAN KHOMAN
Director
T: +971 4 387 5033
E: Ehsan_Khoman@ae.mufg.jp

Credit Strategy

Corporate Credit (Europe)

KONRAD BOSZKO, CFA
Director
T: +44 (0)20 7577 2352
E: Konrad.Boszko@mufgsecurities.com

High Yield (US)

AMIL SCHIAFFINO
Director
T: +1 212 405 7354
E: Amil.Schiaffino@mufgsecurities.com

Investment Grade Energy (US)

DANIEL VOLPI
Director
T: +1 212 405 7328
E: Daniel.Volpi@mufgsecurities.com

MUFG Securities produced marketing material - please read

CERTIFICATION

The author(s) mentioned on the cover of this report hereby certify(ies) (or, where multiple authors are responsible, individually certify with respect to each security that the author covers in this report) that the views expressed in this report accurately reflect their personal views about the subject company(ies) and its (their) securities, and also certify(ies) that they have not been, are not, and will not be receiving direct or indirect compensation in exchange for expressing any specific recommendation(s) or view(s) in this report.

DISCLAIMERS

This report has been prepared by the Global Markets Research, US Rates and Credit Strategy desks within MUFG Bank , Ltd. (“MUBK”) and MUFG Securities EMEA plc (“MUS(EMEA)”) and may be distributed to you either by MUBK, MUS(EMEA) or by another subsidiary of the Mitsubishi UFJ Financial Group (“MUFG”).

Legal entities and branches

The securities related businesses within MUFG (together referred to in this presentation as “MUFG Securities”) are: (1) MUFG SECURITIES EMEA PLC (“MUS(EMEA)”) which is authorised in the United Kingdom by the Prudential Regulation Authority (“PRA”) and regulated by the Financial Conduct Authority (“FCA”) and the PRA (FS Registration Number 124512). MUS(EMEA) has a branch office that is registered at Level 3, East Wing, The Gate, Dubai International Financial Centre, PO Box 506894, Dubai, UAE (“Dubai Branch”). The Dubai Branch is authorised to operate in the Dubai International Financial Centre (“DIFC”) as a Non-DIFC Entity (Commercial License Number CL1656) and is regulated by the Dubai Financial Services Authority (Reference Number F002623); (2) (MUFG Securities (Europe) N.V. (“MUS (EU)”) which is authorized and regulated in the Netherlands by the Dutch Authority for the Financial Markets (AFM) and also regulated by De Nederlandsche Bank (DNB). MUS (EU) Paris Branch is regulated in France by the Autorité de contrôle prudentiel et de résolution (ACPR) and the Autorité des marchés financiers (AMF); (3) MUFG SECURITIES AMERICAS INC. (“MUS(USA)”) which is registered in the United States with the Securities and Exchange Commission (“SEC”) and regulated by the Financial Industry Regulatory Authority (“FINRA”) (SEC# 8-43026; CRD# 19685); (4) MUFG SECURITIES (CANADA), LTD. (“MUS(CAN)”) which is registered in Canada with the Ontario Securities Commission (“OSC”) and regulated by the Investment Industry Regulatory Organization of Canada (“IIROC”); (5) MUFG SECURITIES ASIA LIMITED (“MUS(ASIA)”) which is incorporated in Hong Kong, licensed under the Hong Kong Securities and Futures Ordinance and regulated by the Hong Kong Securities and Futures Commission (Central Entity Number AAA889). MUS(ASIA) is registered as a foreign company under the Corporations Act 2001 of Australia ARBN No. 169 329 453; and (6) MUFG Securities Asia (Singapore) Limited (“MUS(SPR)”) which is licensed as an approved merchant bank by the Monetary Authority of Singapore. In respect of the financial services provided to wholesale clients in Australia, MUS(ASIA), MUS(EMEA), MUS(USA) and MUS(SPR) are each exempt from the requirement to hold an Australian financial services licence under the Corporations Act 2001 of Australia under the Australian Securities and Investments Commission Class Order Exemption CO 03/1099, CO 03/1103, CO 03/1100, and CO 03/1102, respectively. Each of MUS(ASIA), MUS(EMEA), MUS(USA), MUS(CAN), and MUS(SPR) are regulated under the laws of Hong Kong, the United Kingdom, the United States, Canada and Singapore respectively, which differ from Australian laws.

MUFG Bank Ltd (“MUBK”), is a limited liability stock company incorporated in Japan and registered in the Tokyo Legal Affairs Bureau (company no. 0100-01-008846). MUBK's head office is at 7-1 Marunouchi 2-Chome, Chiyoda-Ku, Tokyo 100-8388, Japan. MUBK's London branch is at Ropemaker Place, 25 Ropemaker Street, London EC2Y 9AN, and is registered as a UK establishment in the UK register of companies (registered no. BR002013). MUBK is authorised and regulated by the Japanese Financial Services Agency. MUBK's London branch is authorised by the UK Prudential Regulation Authority ("PRA") and regulated by the UK Financial Conduct Authority ("FCA") with limited regulation by the PRA.

General disclosures

This report is for information purposes only and should not be construed as investment research as defined by MIFID 2 or a solicitation of any offer to buy or sell any security, commodity, futures contract or related derivative (hereafter "instrument") or to participate in any trading strategy. This report does not constitute a personal recommendation and does not take into account the individual financial circumstances, needs or objectives of the recipients. Recipients should therefore seek their own financial, legal, tax or other advice before deciding to invest in any of the instruments mentioned in this report.

Certain information contained in this report has been obtained or derived from third party sources and such information is believed to be correct and reliable but has not been independently verified. MUFG Securities does not make any guarantee, representation, warranty or undertaking, express or implied, as to the fairness, accuracy, reliability, completeness, adequacy or appropriateness of any information or comments contained in this report. Furthermore the information may not be current due to, among other things, changes in the financial markets or economic environment. MUFG Securities has no obligation to update any such information contained in this report.

This report is not intended to forecast or predict future events. Past performance is not a guarantee or indication of future results. Any prices provided herein (other than those identified as being historical) are indicative only and do not represent firm quotes as to either price or size.

This report is proprietary to MUFG Securities and may not be quoted, circulated or otherwise referred to without our prior written consent. Notwithstanding this, MUFG Securities shall not be liable in any manner whatsoever for any consequences or loss (including but not limited to any direct, indirect or consequential loss, loss of profits and damages) arising from any reliance on or usage of this report and accepts no legal responsibility to any investor who directly or indirectly receives this material.

Country and region specific disclosures

This report is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or is located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to any law, regulation or rule.

In this regard, please note the following in relation to the jurisdictions in which MUFG Securities has a local presence:

• *United Kingdom / European Economic Area (EEA): This report is intended for distribution to a "professional client" or "eligible counterparty" as those terms are defined in the rules of the FCA and PRA. In other EEA countries, this report is intended only for persons regarded as professional investors (or equivalent) in their home jurisdiction.*

• *United States of America: This report, when distributed by MUS(USA), is intended for Institutional Investors ("Institutional Accounts" as defined by FINRA Rule 4512(c)). When distributed by a non-US affiliate of MUS(USA), this report is intended for* *distribution solely to "major U.S. institutional investors" or "U.S. institutional investors" pursuant to Rule 15a-6 under the U.S. Securities Exchange Act of 1934, as amended. Securities referenced in this report may have been underwritten by MUS(USA) and/or its affiliates. Nothing in this report should be considered an offer or solicitation of an offer to buy or sell securities or any other financial product or a commitment of any kind with respect to any transaction.*

IRS Circular 230 Disclosure: MUFG Securities does not provide tax advice. Accordingly, any discussion of U.S. tax matters included herein (including any attachments) is not intended or written to be used, and cannot be used, in connection with the promotion, marketing or recommendation by anyone not affiliated with MUS(USA) of any of the matters addressed herein or for the purpose of avoiding U.S. tax-related penalties.

• Hong Kong: This report is only intended for distribution to a "professional investor" as that term is defined in the Securities and Futures Ordinance and should not be passed onto any other person.

• Singapore: This report is only intended for distribution to an "institutional investor", "accredited investor" or "expert investor" as those terms are defined under regulation 2 of the Financial Advisers Regulation. It is solely for the use of such investors and shall not be distributed, forwarded, passed on or disseminated to any other person. Investors should note that, as a result of exemptions that apply when this report is distributed to "accredited investors" and "expert investors", MUSS is exempt from complying with certain requirements under the Financial Advisers Act, including section 25 of the Financial Advisers Act (which requires a financial adviser to disclose all material information on certain investment products), section 27 (which requires a financial adviser to have a reasonable basis for making recommendations on investments) and section 36 (which requires a financial adviser to disclose any interests that it holds in securities that it recommends).

• Canada: When distributed in Canada, this report is distributed by MUS(EMEA) or MUSA. MUS(EMEA) operates under an International Dealer Exemption from registration with the securities regulators in Alberta, British Columbia, Manitoba, Ontario and Québec. MUSA operates under an International Dealer Exemption from registration with the securities regulators in all Canadian Provinces and Territories. This report is only intended for a "permitted client" as that term is defined under the National Instrument 31-103 in Canada and is not intended for re-distribution to any other person. The information contained herein is not, and under no circumstances is to be construed as, a prospectus, an advertisement, a public offering, an offer to sell securities described herein, or solicitation of an offer to buy securities described herein, in Canada or any province or territory thereof. Under no circumstance is the information contained herein to be construed as investment advice in any province or territory of Canada and is not tailored to the needs of the recipient.

• Japan: This Note, when distributed by MUFG Securities affiliates located outside of Japan, is intended for distribution in accordance with Article 58-2 of the Financial Instruments Exchange Act 1948 ("FIEA") i) to a "Financial Instruments Business Operator" engaged in "Securities-Related Business" as defined in the FIEA or ii) to the government, the Bank of Japan, a qualified financial institution defined in Article 209 of the Cabinet Office Ordinance Concerning Financial Instruments Business, Etc., or an Investment Manager.

When distributed by Mitsubishi UFJ Morgan Stanley Securities Co., Ltd., this Note is intended for distribution to a "Professional Investor (tokutei-toushika)" as defined in the FIEA.

• United Arab Emirates: This report is only intended for distribution to a "Professional Client" or "Market Counterparty" as those terms are defined under the rules of the

Dubai Financial Services Authority and only a person meeting the criteria for these terms should act upon this report.

• *Australia: This Note is only intended for distribution to persons in Australia who are sophisticated or professional investors for the purposes of section 708 of the Corporations Act of Australia, and are wholesale clients for the purposes of section 761G of the Corporations Act of Australia. This Note is not intended to be distributed or passed on, directly or indirectly, to any other class of persons in Australia*.

Other jurisdictions:

MUFG Securities also relies on local registrations or regulatory exemptions in order to undertake certain securities business in other countries. In Thailand, MUS(EMEA) has a derivatives dealer registration with the Securities and Exchange Commission, Thailand. In Canada, MUS(EMEA) and MUS(USA) each operate under an international dealer exemption registered with the securities regulators. MUS(EMEA) operates under the exemption in Alberta, Quebec, Ontario, British Columbia and Manitoba. MUS(USA) operates under the exemption in all Canadian Provinces and Territories..

〒　100-8127東京都千代田区大手町1-9-2　大手町フィナンシャルシティ　グランキューブ
三菱UFJモルガン・スタンレー証券株式会社　市場商品本部　フィクストインカムグループ　金融市場営業第一部